

The Challenge Of Measuring Performance Of Academia In Malaysia STEM (Country & Institutional)

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5th July 2012



The Challenge Of Measuring Performance Of Academia In Malaysia

Recently, the use of Key Performance Indicators in academia in Malaysia has become quite prevalent. The detractors claim that this pursuit of quantifiable KPIs will retard the growth of academics' leadership in their disciplines. This could be true in some fields! Academic credibility is not measured just by annual KPI numbers, but also by a cumulative acquisition of leadership in their fields of expertise, measured first by their scholarly peer-reviewed publications.

Academics do not exist in isolation in an “ivory tower”, they are part of a university, society and global community. As universities strive to be world-class in their mission, those in academia cannot detach themselves from the global picture. Thus, University management of today has no viable alternative except to use well-established international benchmarks to measure staff performance. In this discussion, I will share some of my views on this aspect.

CHALLENGES FOR UNIVERSITY MANAGERS

Today, there is a constant need to measure and quantify activities and performance at colleges and universities. Higher education institutions need to comply with government mandates. Compete globally for researchers and students. Review programs and substantiate accreditation. Make strategic decisions about whether to build on existing strengths or develop new areas



19 century : Europe
20 century : North
America
21 century : Asia?

NATIONAL SCIENCE BOARD

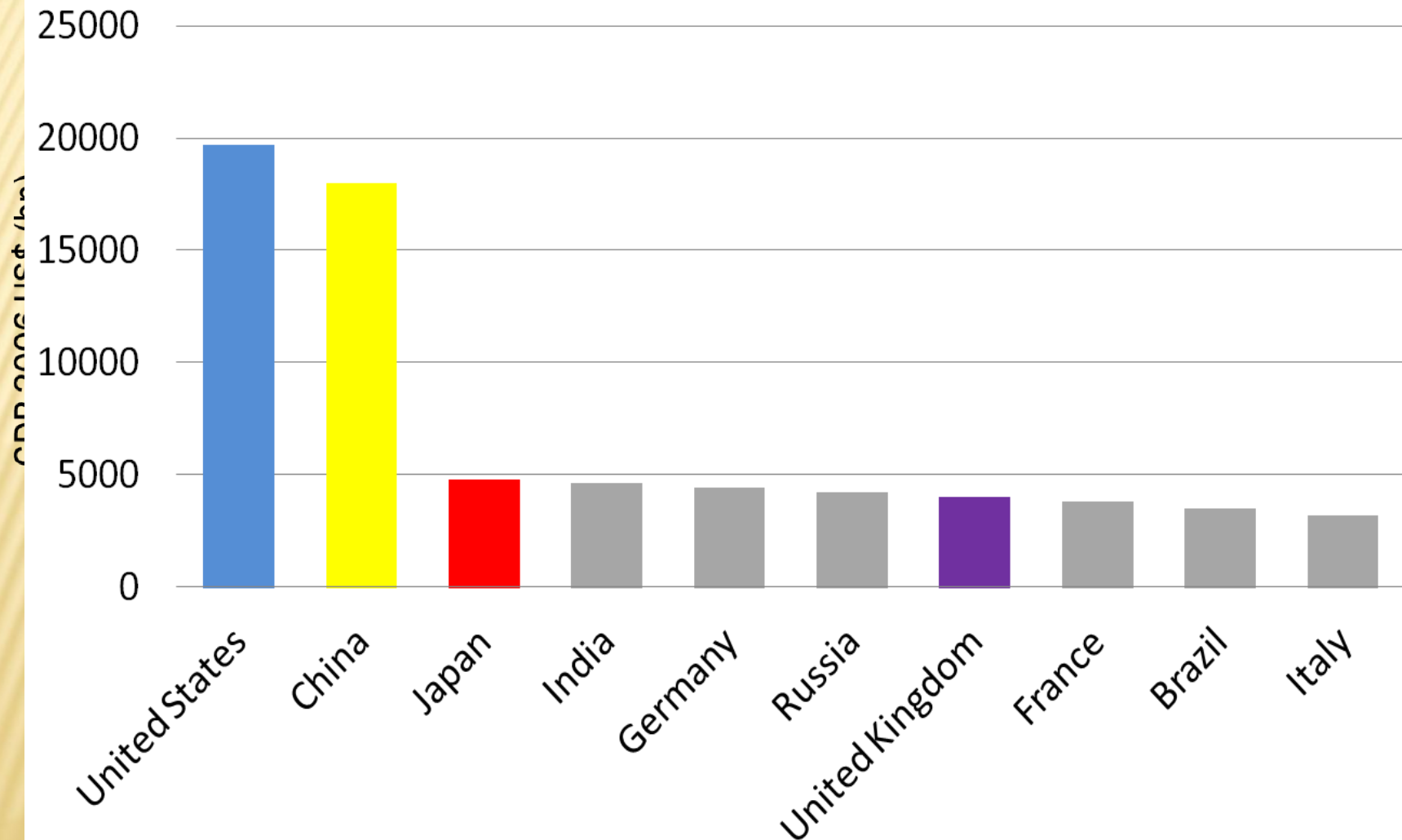
US SCIENCE AND ENGINEERING INDICATORS 2012

Asia's rapid ascent as a major world S&T center is chiefly driven by developments in China, which on most indicators continues to show long-term growth that would normally be regarded as unsustainable.

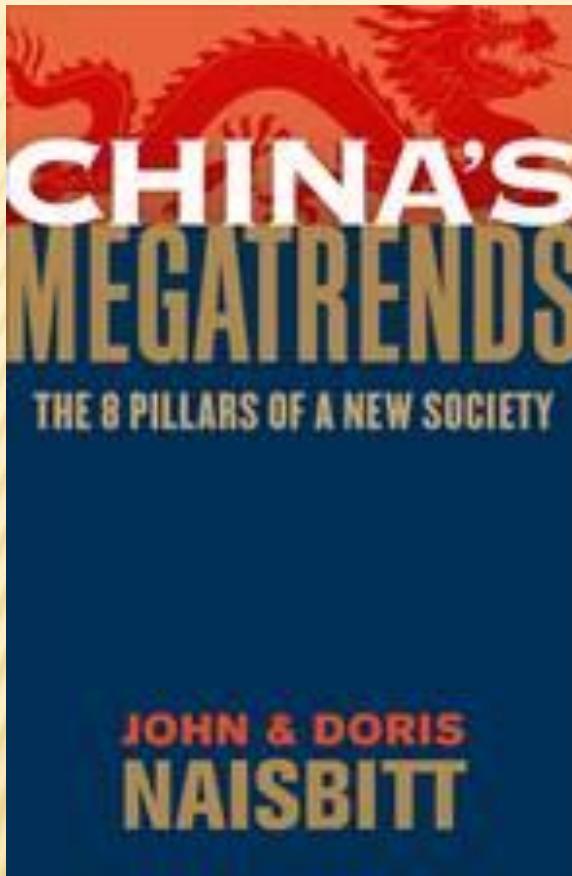
But several other Asian economies (the Asia-8) have also played a role. All are intent on boosting quality of, and access to, higher education and developing world-class research and S&T infrastructures. The Asia-8 functions like a loosely structured supplier zone for China's high-technology manufacturing export industries. This supplier zone increasingly appears to include Japan.



The World in 2025



Martin Jacques : Understanding The Rise of China (2010)



“We were in search of China’s Megatrends. We were aware that we were looking at a country undergoing great change in a very complex way, with each region and each city moving at different levels and at different speeds.

“What we found was of much greater dimension and importance than we had expected. China is creating an entirely new social and economic system. In the next decades China will not only change the conditions of global economics, the Chinese model challenges the Western democracy as the only governing model capable of reducing poverty and providing the social and economic rights required.”
John and Doris Naisbitt

“At the end of the visit, not only were the objectives of the visit met, but the delegation in fact acquired many new and useful ideas to take UM to higher Standing among top universities worldwide. UM can certainly learn from the policies and practices of the Chinese universities. In particular, what was interesting was learning the phenomenal growth of the Top 100 Chinese universities and what has driven this growth. “

Ghauth Jasmon Jan 2010

WHERE IS MALAYSIA IN THE ASIA-8?



ESSENTIAL SCIENCE INDICATORS^(SM)

Determine influential individuals, institutions, papers, publications, and countries in your field of study – as well as emerging research areas that could impact your work. Essential Science Indicators is a unique compilation of science performance statistics and science trends data based on journal article publication counts and citation data from across Thomson Reuters Science databases.

In-depth coverage: You can access approximately ten million articles in over 11,000 journal titles from around the world.

A solid basis for comparison of research performance: Includes baselines, which are the benchmarks for assessing research impact.

Expert guidance that enhances data: Provides editorial comments from scientists and researchers

TOP 20 NATIONS IN CHEMISTRY; JANUARY 2000-DECEMBER 2010

COUNTRY FEATURE, MARCH 2011

Rank	Country	Papers	Citations	Cites per paper
1	USA	229,635	4,308,363	18.76
2	JAPAN	115,760	1,363,434	11.78
3	GERMANY	96,984	1,349,496	13.91
4	PEOPLES R CHINA	181,496	1,245,602	6.86
5	FRANCE	66,244	852,544	12.87
6	ENGLAND	55,781	844,654	15.14
7	SPAIN	46,762	581,282	12.43
8	ITALY	42,623	528,136	12.39
9	CANADA	33,507	454,102	13.55
10	INDIA	64,903	451,536	6.96
11	SOUTH KOREA	36,557	360,424	9.86
12	NETHERLANDS	18,817	346,562	18.42
13	SWITZERLAND	18,663	328,949	17.63
14	AUSTRALIA	19,131	237,923	12.44
15	SWEDEN	14,800	226,028	15.27
16	RUSSIA	61,590	219,541	3.56
17	POLAND	29,453	207,607	7.05
18	TAIWAN	20,041	186,746	9.32
19	BELGIUM	13,246	166,600	12.58
20	BRAZIL	20,637	158,281	7.67

Source: *Essential Science Indicators*SM from [Thomson Reuters](#), time period: January 2000-December 31, 2010 (sixth bimonthly period of 2010).

Some comparative data – Thailand, Malaysia, Singapore

Field	Papers	Citations	Citations Per Paper
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THAILAND

1	<u>CLINICAL MEDICINE</u>	7,659	88,837	11.60
2	<u>CHEMISTRY</u>	4,761	35,114	7.38


MALAYSIA


1	<u>CHEMISTRY</u>	7,365	28,652	3.89
2	<u>CLINICAL MEDICINE</u>	3,884	21,130	5.44

SINGAPORE


1	<u>CLINICAL MEDICINE</u>	11,042	130,148	11.79
2	<u>CHEMISTRY</u>	9,162	126,527	13.81

Field Rankings - Thailand



	Field	Papers	Citations	Citations Per Paper
1	CLINICAL MEDICINE	7,659	88,837	11.60
2	CHEMISTRY	4,761	35,114	7.38
3	PLANT & ANIMAL SCIENCE	3,686	20,815	5.65
4	MICROBIOLOGY	1,665	18,534	11.13
5	BIOLOGY & BIOCHEMISTRY	2,013	17,855	8.87
6	ENGINEERING	3,268	15,365	4.70
7	AGRICULTURAL SCIENCES	2,065	13,246	6.41
8	IMMUNOLOGY	870	13,066	15.02
9	ENVIRONMENT/ECOLOGY	1,408	11,212	7.96
10	PHARMACOLOGY & TOXICOLOGY	1,212	10,258	8.46

Field Rankings – Malaysia

	Field	Papers	Citations	Citations Per Paper
1	<u>CHEMISTRY</u>	7,365	28,652	3.89
	<u>CLINICAL MEDICINE</u>	3,884	21,130	5.44
3	<u>ENGINEERING</u>	4,032	15,049	3.73
4	<u>ENVIRONMENT/ECOLOGY</u>	1,324	9,456	7.14
5	<u>MATERIALS SCIENCE</u>	2,440	8,603	3.53
6	<u>BIOLOGY & BIOCHEMISTRY</u>	1,178	8,550	7.26
7	<u>PLANT & ANIMAL SCIENCE</u>	1,878	7,191	3.83
8	<u>AGRICULTURAL SCIENCES</u>	1,358	7,013	5.16
9	<u>PHYSICS</u>	1,911	6,518	3.41
10	<u>MICROBIOLOGY</u>	1,107	4,086	3.69

Field Rankings – Singapore

	Field	Papers	Citations	Citations Per Paper
1	<u>CLINICAL MEDICINE</u>	11,042	130,148	11.79
2	<u>CHEMISTRY</u>	9,162	126,527	13.81
3	<u>ENGINEERING</u>	13,277	84,279	6.35
4	<u>PHYSICS</u>	9,766	75,294	7.71
5	<u>MATERIALS SCIENCE</u>	6,110	74,545	12.20
6	<u>MOLECULAR BIOLOGY & GENETICS</u>	2,298	52,619	22.90
7	<u>BIOLOGY & BIOCHEMISTRY</u>	3,026	44,971	14.86
8	<u>COMPUTER SCIENCE</u>	4,335	16,220	3.74
9	<u>PHARMACOLOGY & TOXICOLOGY</u>	1,019	16,046	15.75
10	<u>MICROBIOLOGY</u>	922	14,988	16.26

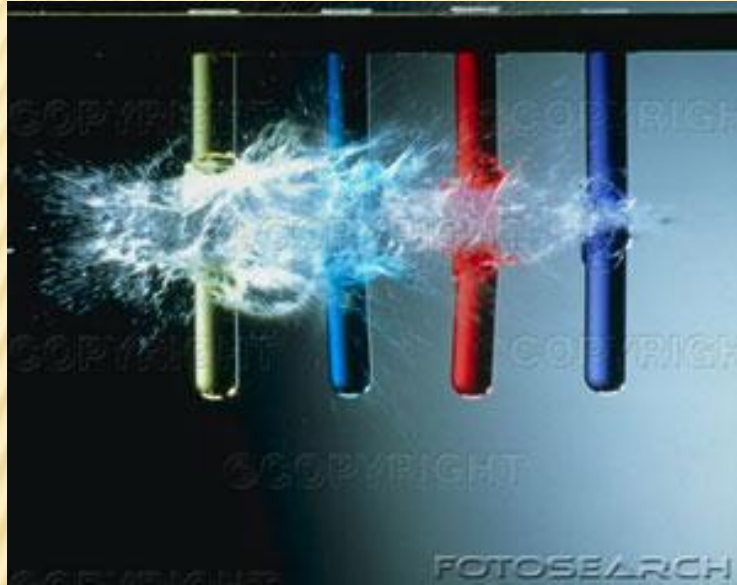
*(The Bibliometric Study of Science and Technology
Knowledge Productivity in Malaysia 2004)*

**THE FINDINGS INDICATE AN URGENT NEED
FOR MALAYSIA TO TAKE STEPS TO INCREASE S
& T KNOWLEDGE OUTPUTS SO AS TO ACHIEVE
BETTER STATUS IN WORLD SCIENCE, AS WELL
AS FULFILL THE COUNTRY'S VISION 2020...**

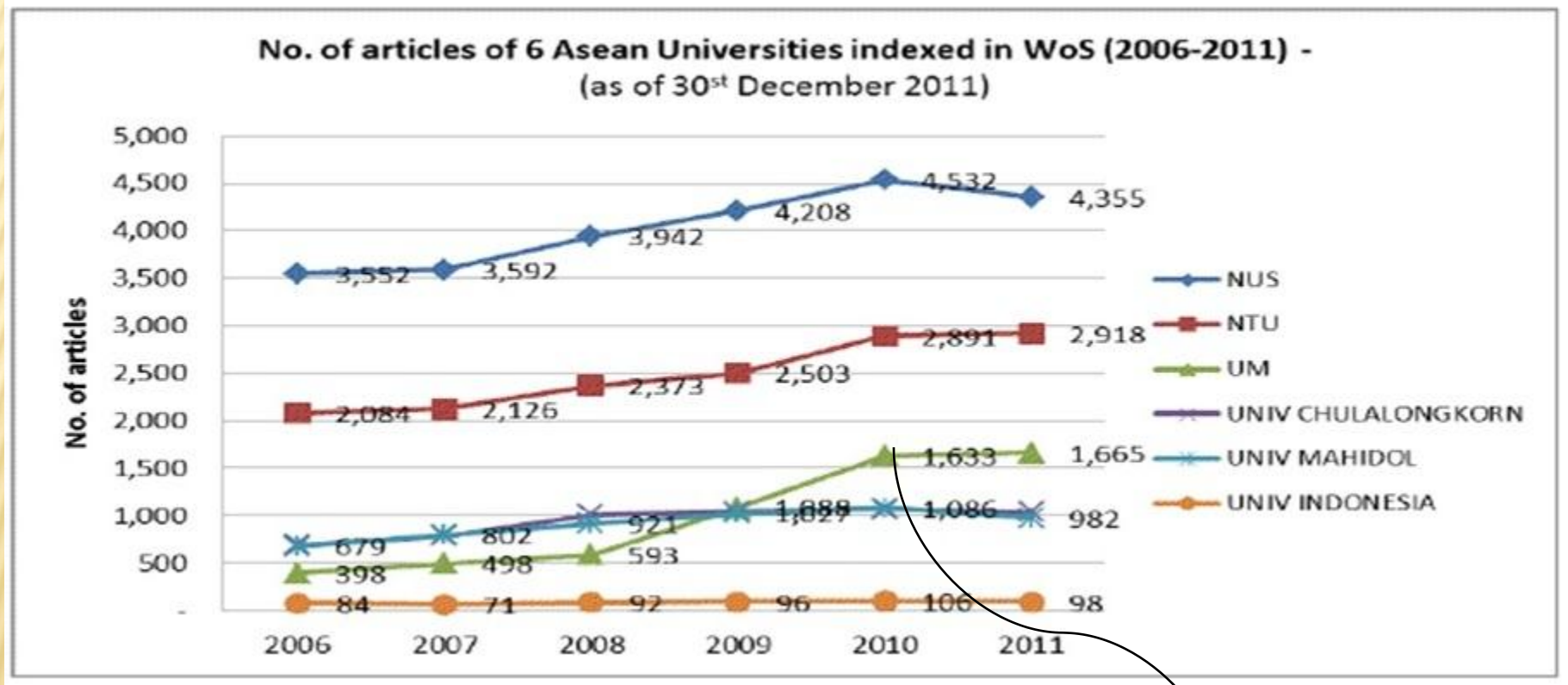
WHERE IS UM?



PAINT A THOUSAND WORDS WITH ONE PICTURE.



UM in the ASEAN Web of Universities

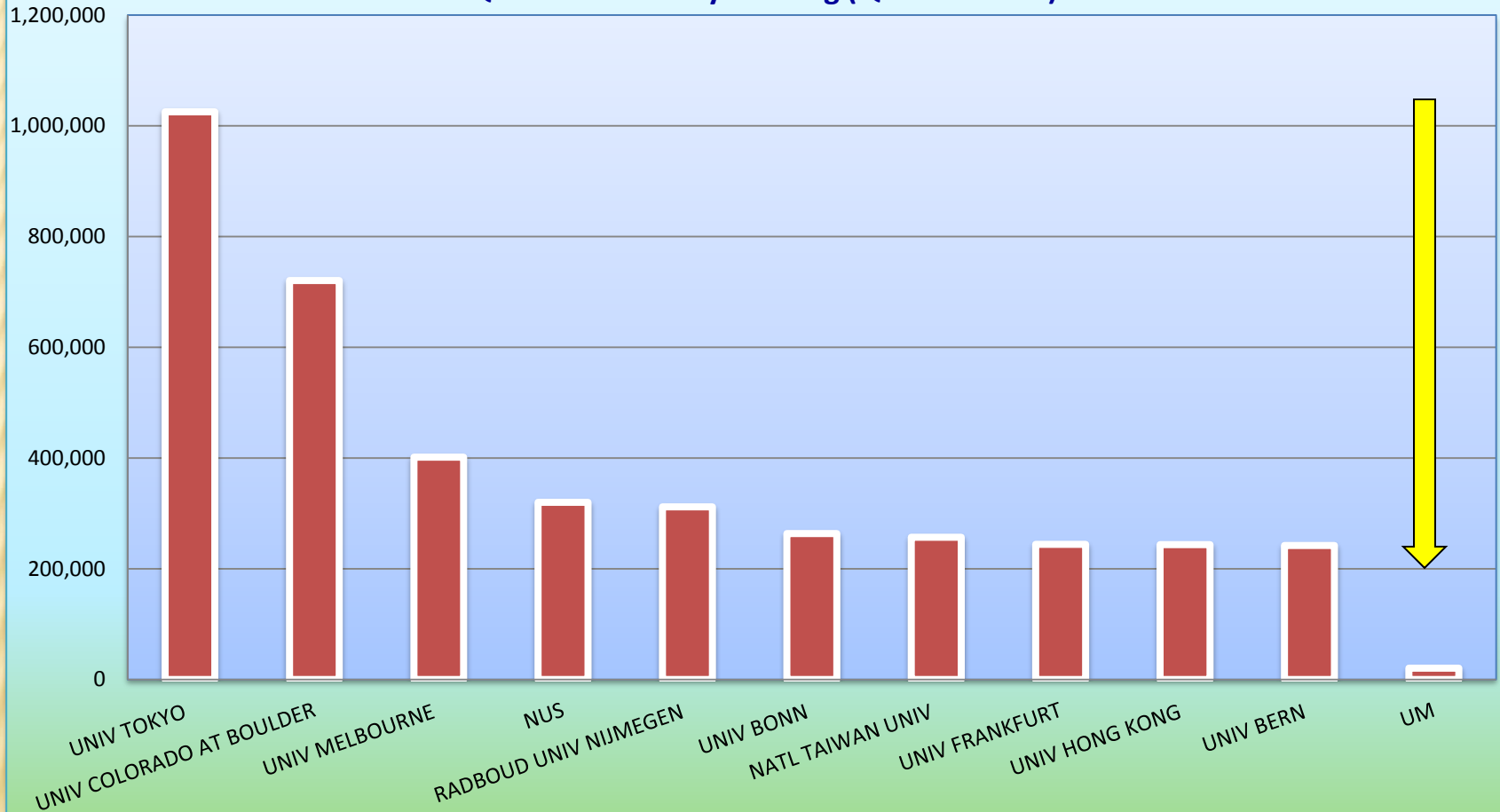


1st time UM

CITATIONS

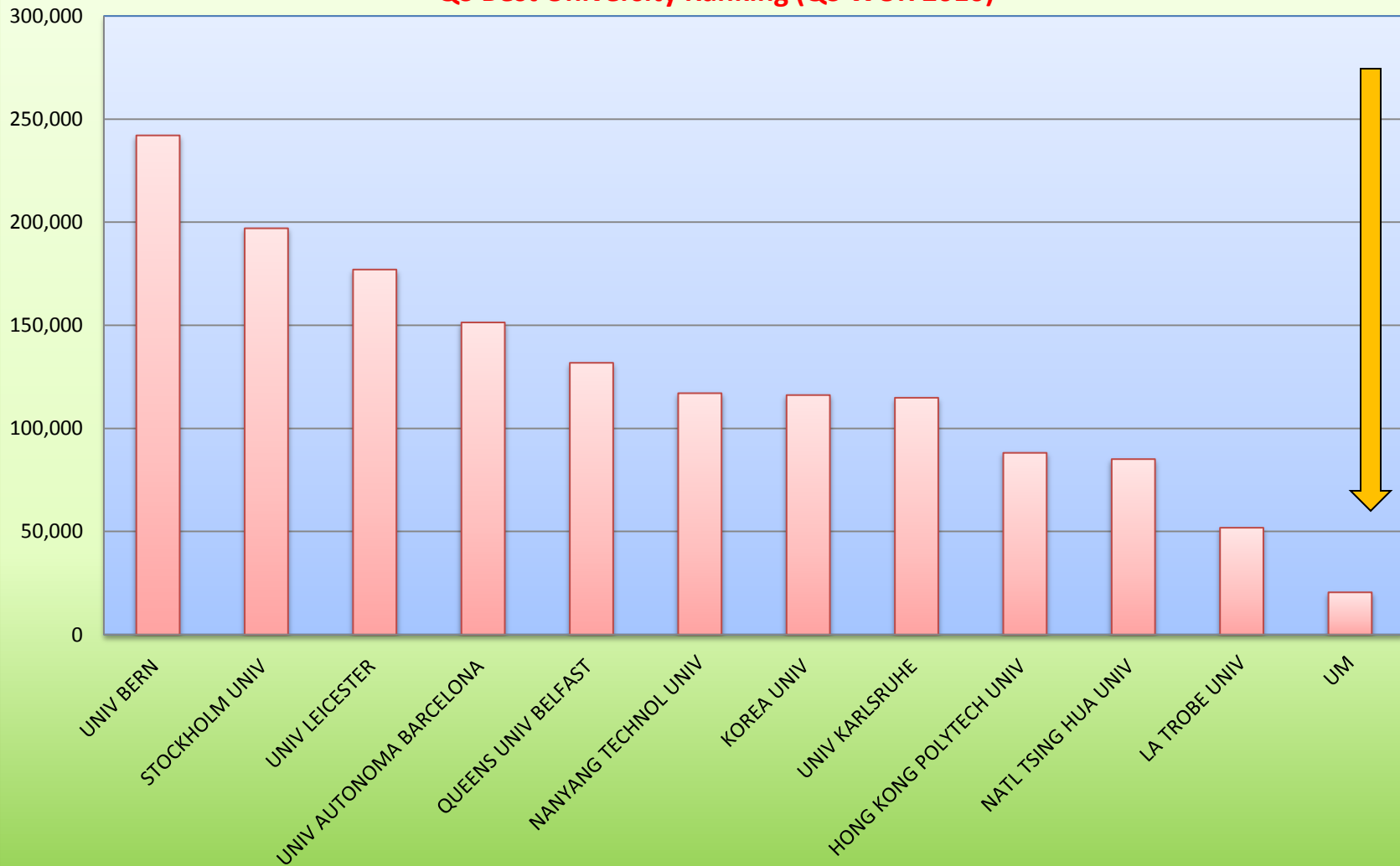


Comparison of Total Citations for Selected Universities QS Best University Ranking (QS WUR 2010)



Comparison of Total Citations for Selected Universities

QS Best University Ranking (QS WUR 2010)



Comparison of Total Citations for Other Universities

QS Best University Ranking (QS WUR 2010)



WHERE ARE UM ACADEMICS?

A Citations Study of Journal Articles published by academics at University of Malaya - Authors using only UM address and non – UM addresses

(1980- August 2009)

“This data provides an interesting insight of the quality of research that a research university such as UM is undertaking. This will help UM management identify the strength and weakness. Why do we need to do this since we have a few hundred experts in the multifarious fields who can advise the management. The reason is simple that with the WoS we have an impartial and independent view of UM researchers (especially in science-based, medical-based, health-based, and technology-based) and the quality of work that is being undertaken.”

Sekretariat Peningkatan Prestasi dan Ranking Universiti

Findings: Less than 20% of academic staff had met the 20 cumulative citations cutoff to be included in this list!

THE *H*-INDEX

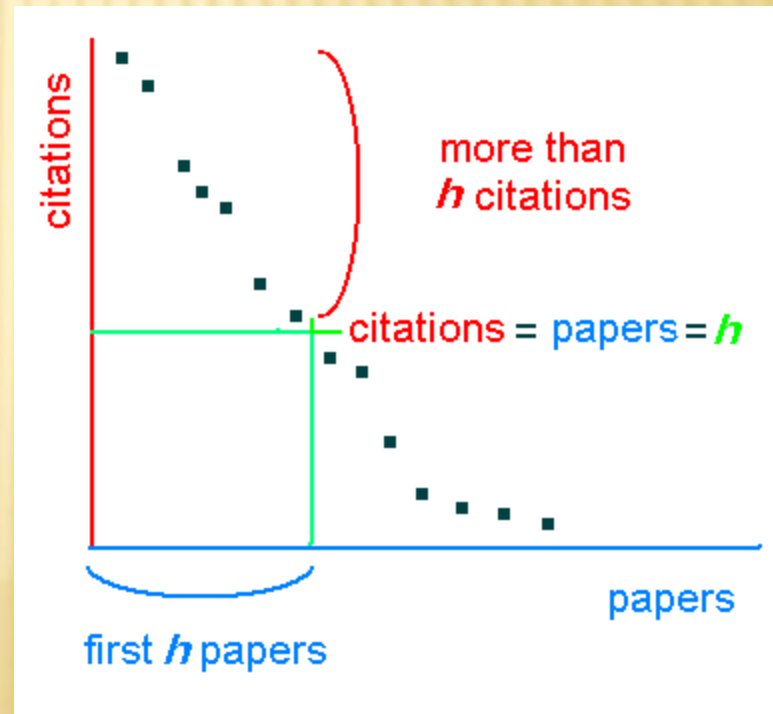
An index to quantify an individual's scientific research output (2005)

H-index

- H-index of 39 means the author has published 39 articles that have at least 39 citations each.

**This researcher
has a H-index of 5**

Papers	Number of citations
1	15
2	11
3	9
4	7
5	5
6	2
7	1



CHALLENGES

- ✓ Quality Researchers
- ✓ Quality Students
- ✓ Research Funding (Govt, Private, International)

UNIVERSITY OF MALAYA'S PLAN (2010-2015)



University Ranking and Global Competition
(since 2003)

University Ranking have intensified Global Competition among TOP institutions.

Smarter Partnerships in Asia – Shift in Priority

Universities are judged by their Research Performance, Production of Quality Graduates, Attracting Quality Faculties

Increased Investments in Research Universities.

1st Phase

[Fundamentals 2007 -2010] -

It is expected that 3 universities in the Top 200 and at least one in the Top 100 in the world

2nd Phase

[Strengthening and Improving 2011-2015] -

It is expected that two universities will be among the Top 100 and one in the Top 50.

Thrust

4

3rd Phase

[Excellence - 2016-2020] – 3 universities in the Top 100 and at least 1 in the Top 50.

4th Phase

[Beyond 2020] – Two universities in the Top 50.

PSPTN (NHESP Target

UM's INTERNATIONAL TARGET



**SHANGHAI JIAO TUNG
UNIVERSITY RANKING (SJTU)**



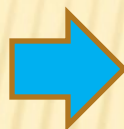
- 1) Research Output – 40%
- 2) Quality of Faculty – 40%
- 3) Quality of Education – 10%
- 4) Size of Institution – 10%



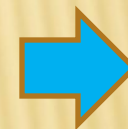
2025



**THE World
University Ranking (QS)**



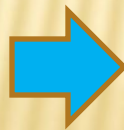
- 1) Academic Peer Review – 40%
- 2) Research Excellence – 20%
- 3) Teaching Excellence – 20%
- 4) Employer Survey – 10%
- 5) International Students – 5%
- 6) International Faculty – 5%



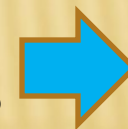
2020



**QS World
University Ranking (QS)**



- 1) Academic Peer Review – 40%
- 2) Citations per faculty – 20%
- 3) Student faculty ratio – 20%
- 4) Employer/Recruiter review – 10%
- 5) International Students – 5%
- 6) International Faculty – 5%



2015

UNIVERSITY OF MALAYA PRINCIPAL TARGET

**To be ranked on the QS
World University Ranking:**

Top 100 by 2015

Top 50 by 2020

How to achieve these targets?

KPI AT UM INTRODUCED SINCE 2009

STANDARD ACADEMIC PERFORMANCE TARGET (SAPT):

Annual Performance & Promotion

- 1) Journal Publications in ISI/WOS
- 2) H-index
- 3) Citations
- 4) Books
- 5) Research Supervision
- 6) Research Funding
- 7) Teaching
- 8) Consultancy/Community Development
- 9) Administration

PROMOTION CRITERIA FOR NON-SCIENCE DISCIPLINE (2010 – 30.6.2013) UNIVERSITY OF MALAYA

Number of Publications required for promotion to:	Books	ISI/Refereed Articles in Top Tier Journals (Category A & B)/Chapters In Books
Professor A	6	50 At least 16 must be in Tier 1 & 2 ISI Journal
Professor B	4	40 At least 10 must be in an ISI Journal
Professor C	2	30 At least 5 must be in an ISI Journal
Associate Professor	1	15 At least 2 must be in an ISI Journal
Senior Lecturer	-	10 At least 1 must be in an ISI Journal
Lecturer (for confirmation)	-	5 At least 1 must be in an ISI Journal or ISI Proceeding after appointment to Lecturer post

STANDARD ACADEMIC PERFORMANCE TARGET (SCIENCE DISCIPLINE)

Criteria	Professor (A)	Professor (B)	Professor (C)	Assoc. Professor	Senior Lecturer	Lecturer
ISI-Ranked Full Length Journal Paper/Book Published by International Publisher (Minimum for Promotion) 30% may be books but published by Internationally-renowned Publishers. [UM Publishers shall also be acceptable for books published with at least 3 International Expert Referees in the Subject Area]. All publications in SCOPUS Journals prior to 1.1.2009 are also accepted. [For Clinical-based Faculties, recognised Clinical Specialist/Expertise may replace a portion of ISI paper publications] At least 40% must be in Tier 1 & Tier 2 level	35@/+	25*/+	15	8	3	-
H-Index & Minimum Citation	Sila Rujuk Lampiran TGP 4(2)					
ISI-Ranked Full Length Journal Paper/Book Published by International Publisher [Yearly Requirement]	4+	3+	2	1	1	½
Research Student Supervised to completion [Minimum for Promotion to the Position]	8D, 6M	6D, 4M	4D, 4M	2D, 2M	2M	-
Research Student Supervised to completion (Yearly Requirement Applicable for staff that has been in UM for more than 4 years) [This yearly requirement can be substituted by full length approved Faculty Journal Publications: 1M by 2 faculty journal papers and 1D by 4 faculty journal papers]	2D,2M	1D,2M	1D,1M	2M	1M	-
Research Funding (RF) [Yearly Requirement]	4X<RF<4Y	3X<RF<3Y	2X<RF<2Y	1X<RF<1Y	0.5X<RF<0.5Y	-
Teaching [Minimum Score For Each Subject Taught]	4.2/6.0	4.2	4.2	4.2	4.2	4.2
Consultancy/Expert Advisor/Resource Person [Minimum for Promotion]	14	10	6	4	2	-
Administration	S	S	S	S	S	S

X, Y - To be decided by School
 * - 30% of papers as must be first authors
 @ - 10 papers, each with at least 10 citations

[S - Satisfactory, M- Masters, D -Doctorate] [2M taken as 1D]
 / - International research award
 + - Leader of a recognized Research Group

[Note: For postgraduate thesis submission, a PhD candidate needs to show proof of 2 submissions to an ISI journal and Masters By Research needs proof of 1 submission]

TGP 4(2)

PROMOTION CRITERIA (SCIENCE DISCIPLINE)

A: FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

	1.7.2010 – 30.6.2012			1.7.2012 – 30.6.2014		
	Prof C	Prof B	Prof A	Prof C	Prof B	Prof A
H-index	3	4	7	4	5	8
Citations	36	64	196	64	100	256

B: FACULTY OF ENGINEERING

Jabatan	1.7.2010 – 30.6.2012						1.7.2012 – 30.6.2014					
	Prof C		Prof B		Prof A		Prof C		Prof B		Prof A	
	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation
Kimia	4	64	6	144	8	256	5	100	7	196	9	324
Mekanik	3	36	5	100	7	196	4	64	6	144	8	256
Elektrik	3	36	5	100	7	196	4	64	6	144	8	256
Awam	3	36	4	64	6	144	4	64	5	100	7	196
Cad/Cam	3	36	5	100	7	196	4	64	6	144	8	256
Bioperubatan	3	36	5	100	7	196	4	64	6	144	8	256

C: FACULTY OF SCIENCE

Jabatan	1.7.2010 – 30.6.2012						1.7.2012 – 30.6.2014					
	Prof C		Prof B		Prof A		Prof C		Prof B		Prof A	
	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation	H-index	Citation
ISB	3	36	5	100	7	196	4	64	6	144	8	256
ISM (Applied)	3	36	5	100	7	196	5	100	7	196	9	324
ISM (Theoretical)	3	36	5	100	7	196	4	64	6	144	8	256
S & T	3	36	5	100	7	196	4	64	6	144	8	256
Geologi	3	36	5	100	7	196	4	64	6	144	8	256
Fizik	4	64	7	196	10	400	6	144	9	324	12	576
Kimia	4	64	7	196	10	400	6	144	9	324	12	576

UM Publications Indexed in Web of Science 2008-2012 as of April 2012

Year Published	No. of Articles indexed (excluded journals banned by MOHE)	No. of Tier 1 Article	%
2008	594	102	17.17%
2009	1074	174	16.20%
2010	1481	279	18.84%
2011	1955	430	21.99%
2012 #	414	--	

2012 publications is based on JCR2011; and it will only be released in July 2012

UM RESEARCH GRANTS

Grant Name	Total Grant (RM)
Special High Impact Research Grant (HIR) Grant	RM590,156,460 (2011-2015) RM80 million (2011)
Research University Annual (RU) Grant	RM81 million (2011)



BUT THERE ARE ALSO NEW CHALLENGES ...

1. **Ethics – academics.**
2. **Unethical practices by some journals in quest for the Impact factor - Fraudulent journals – see email**

..... *Other issues*

“Dear AFR Cluster Members, Hope this email finds you well.

Here I forward you the information about the fake journal. For your info, IPPP will not pay page charges for publications in the named journal. Please take note.

Thank you & have a nice day.” 04 July 2012

THANK YOU

